

Atty. Docket No. 002187 USA C03/PDC/WF/DB
PATENT APPLICATION

PRELIMINARY AMENDMENT
Rule 53(b) Continuation of
U.S. Application No. 09/298,501

B1
locations on the article suspected of having defects; storing the suspected locations in a storage device; and, in a second phase examination, optically examining with high resolution only the suspected locations of the article's surface for determining the presence or absence of a defect in the suspected locations; characterized in that the first phase examination is effected by optically scanning the complete surface of the article at a high speed with an optical beam of small diameter. Thus, by selecting the diameter of the optical beam used in the first phase examination, the first phase examination may be made at any desired resolution, as compared to the second phase examination, according to the particular application.

Page 2, please delete the fifth full paragraph, and replace it with the following new paragraph:

B2
According to further features of the invention, the first examining phase is effected by optically scanning the complete article surface to be inspected with a laser beam of small diameter; and the second examining phase is automatically effected immediately after the first phase by imaging only the suspected locations on an image converter which converts the images to electrical signals and then analyzes the electrical signals.

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✓ Pages 2-3, please delete the paragraph bridging these two pages, and replace it with the following new paragraph:

According to still further features in preferred embodiments of the invention described below, the surface of the article to be inspected includes a pattern, e.g., a patterned wafer used for producing a plurality of integrated-circuit dies or chips. The first examination phase is effected by making a comparison between the inspected pattern and another pattern, serving as a reference pattern, to identify locations on the inspected pattern wherein there are sufficient differences with respect to the reference pattern to indicate a high probability of a defect in the inspected pattern. The second examination phase is also effected by making a comparison between the inspected pattern and the reference pattern, to identify locations on the inspected pattern wherein the comparison shows sufficient differences with respect to the reference pattern to indicate the presence of a defect in the suspected location of the inspected pattern.

✓ Page 3, please delete the second full paragraph, and replace it with the following new paragraph:

It will thus be seen that the novel method of the present invention primarily monitors changes in the defect density while maintaining a high throughput with a relatively low false alarm rate. Thus, the first examination is done at a relatively high speed and with a relatively low spatial resolution such as with a laser beam of small diameter to indicate only suspected locations having a high probability of a defect; and the second examination is done with a

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NE. relatively high spatial resolution but only with respect to the suspected locations having a high probability of a defect. The sensitivity of the two phases may be adjusted according to the requirements for any particular application. Thus, where the application involves a relatively low number of defects, the sensitivity of the first examination phase may be increased by using a very small diameter laser beam to detect very small defects at a high speed but at the expense of an increased false alarm rate. However, since only relatively few suspected locations are examined in the second phase, the overall inspection can be effected relatively quickly to enable the fabrication personnel to identify defects caused by any process or equipment, and to immediately correct the cause for such defects.

Page 3, please delete the third full paragraph, and replace it with the following new paragraph:

According to a further feature of the invention, the first examining phase is effected by generating a first flow of N different streams of data representing the pixels of different views of the inspected pattern unit; generating a second flow of N different streams of data representing the pixels of different views of the reference; and comparing the data of the first flow with the data of the second flow to provide an indication of the suspected locations of the inspected surface of the article having a high probability of a defect.